

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
28 July 2005 (28.07.2005)

PCT

(10) International Publication Number  
**WO 2005/067586 A3**

(51) International Patent Classification<sup>7</sup>: G06F 7/04,  
17/30, G06K 9/00

(21) International Application Number:  
PCT/US2005/000201

(22) International Filing Date: 6 January 2005 (06.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/534,520 6 January 2004 (06.01.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

- of inventorship (Rule 4.17(iv))

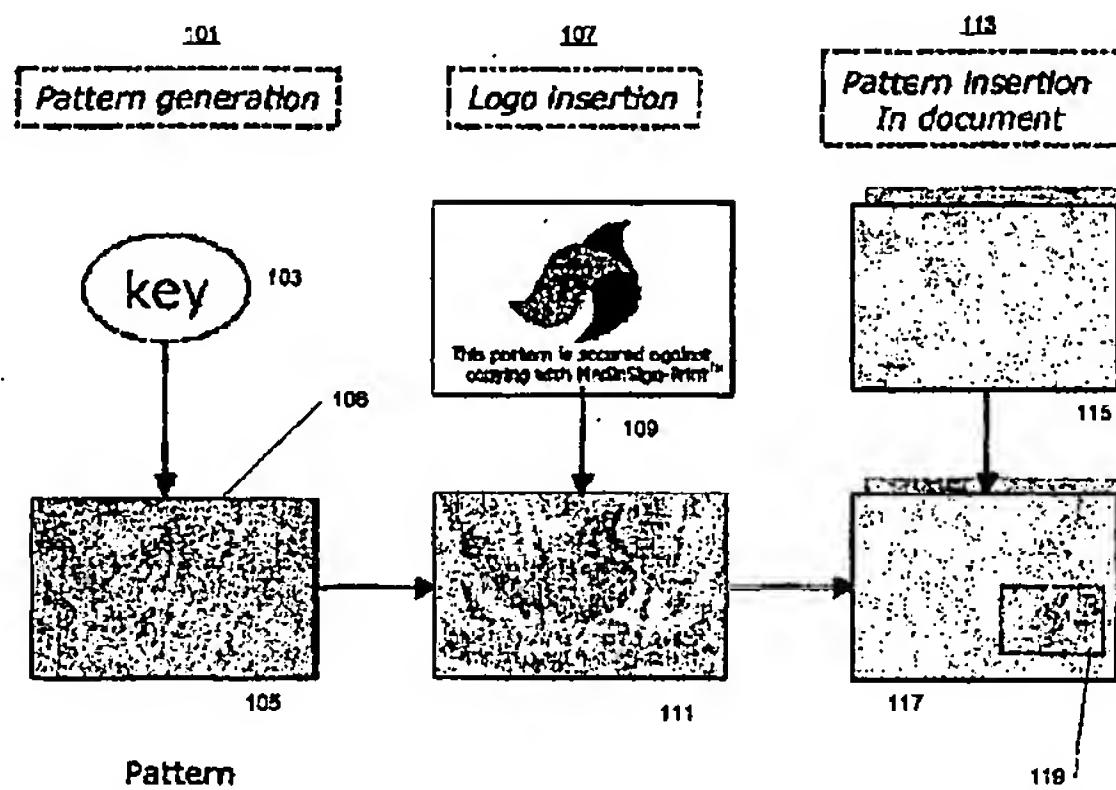
Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:  
20 April 2006

[Continued on next page]

(54) Title: IMPROVED TECHNIQUES FOR DETECTING, ANALYZING, AND USING VISIBLE AUTHENTICATION PATTERNS



(57) Abstract: Improved techniques for making copy detection patterns and using them to detect copying relationships between digital representations. The techniques include techniques for including a message in a copy detection pattern without altering the copy detection patterns entropy and reading the message, techniques for using a copy detection pattern on an analog form to determine whether the analog form is an original analog form without reference to a digital representation of the original of the analog form's copy detection pattern, techniques for increasing the sensitivity of copy detection using copy detection patterns by modifying one of two copy detection patterns that are being compared to take into account alterations resulting from the copying process, techniques for distributing a copy detection pattern across a document, and techniques for using the entropy of a copy detection pattern to locate the copy detection pattern. Also disclosed are applications of copy detection patterns with copying that involves transformations between the digital and analog forms and with digital-to-digital copying.

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